In Figs. 10B and 10A, the same signals are seen before and after correction, but on channel Q.

IN THE CLAIMS

Please amend Claims 1 and 3 as shown in the marked-up copy attached to read as follows:

1. (Amended) A method for receiving spectrum spreading signals with frequency or double shift correction, wherein:

- a signal is received comprising a preamble made up of a sequence of known symbols spread in frequency by a pseudo-random sequence comprising N chips, followed by a sequence of information symbols spread in frequency by said pseudo-random sequence,

- a base band signal is formed from the received signal,

- a correlation is performed between the base band signal and the pseudo-random sequence at least in the portion of the signal corresponding to the information symbols in order to obtain a correlation signal,

- a demodulation of the correlation signal is performed in order to obtain a demodulation signal,

- the information symbols are restored, ~~method~~ wherein the correction of the frequency shift comprises the following steps:

a. in a first step, the correlation signal is processed in the portion corresponding to the preamble, in order to estimate the modulation period affecting this signal because of the frequency shift and a correcting signal with this estimated period is elaborated,

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b. in a second step, the signal is corrected before or after correlation in the portion corresponding to the information symbols, by means of said correcting signal,

this method being characterized in that:

- the base band signal, is divided into two components, a first component and a second component in quadrature with the first and a correlation is performed on each of these components in order to obtain two correlation components CORR(I) and CORR(Q),
- a DOT signal is calculated which is the sum of two direct products of successive samples of the correlation components, as well as a CROSS signal which is the difference between two crossed products of successive samples of the correlation components,
- for estimating the period of the modulation, the ratio between a CROSS signal and a DOT signal is calculated at each symbol period, the arc for which the tangent is equal to this ratio is calculated, the inverse of this arc is calculated and multiplied by $\pi N/2$.

3. (Amended) The method according to claim 1, wherein, in order to form the correction signal, a first component equal to $\cos(\pi x/2T)$ and a second component equal to $\sin(\pi x/2T)$ are formed, wherein x is a unit of time equal to kN, k is a number- assuming all the successive integer values and N is the number of chips of the pseudo-random sequence, and wherein T is the modulation period.

CLAIMS

1. A method for receiving spectrum spreading signals with frequency shift correction, wherein:

- a signal is received comprising a preamble made up of a sequence of known symbols spread in frequency by a pseudo-random sequence, followed by a sequence of information symbols spread in frequency by said pseudo-random sequence,

- a base band signal is formed from the received signal,

- a correlation is performed between the base band signal and the pseudo-random sequence at least in the portion of the signal corresponding to the information symbols in order to obtain a correlation signal,

- a demodulation of the correlation signal is performed in order to obtain a demodulation signal,

- the information symbols are restored,

a method wherein the correction of the frequency shift comprises the following steps:

a. in a first step, the correlation signal is processed in the portion corresponding to the preamble, in order to estimate the modulation period affecting this signal because of the frequency shift and a correcting signal with this estimated period (T) is elaborated,

b. in a second step, the signal is corrected before or after correlation in the portion corresponding to the information symbols, by means of said correcting signal,

this method being characterized in that:

- the base band signal is divided into two components, a first component (I) and a second

component (Q) in, quadrature with the first and a correlation is performed on each of these components in order to obtain two correlation components CORR(I) and CORR(Q),

- a DOT signal is calculated which is the sum of two direct products of successive samples of the correlation components, as well as a CROSS signal which is the difference between two crossed products of successive samples of the correlation components,
- for estimating the period (T) of the modulation, the ratio between a CROSS signal and a DOT signal is calculated at each symbol period, the arc for which the tangent is equal to this ratio is calculated, the inverse of this arc is calculated and multiplied by $\pi N/2$.

2. The method according to claim 1, wherein the CROSS and DOT signals are first filtered by low pass filtering.

3. The method according to claim 1 or 2, wherein, in order to form the correction signal, a first component (Cc) equal to $\cos(\pi x/2T)$ and a second component (Cs) equal to $\sin(\pi x/2T)$ are formed, wherein x is a unit of time equal to kN, k is a number assuming all the successive integer values and N is the number of items of the pseudo-random sequence, and wherein T is the modulation period.

4. The method according to claim 3, wherein the base band signals of the first and/or second channels

i.e., I_{dop} and Q_{dop}, are corrected by calculating a first quantity equal to:

$$I_{dop}.\cos(\pi x/2T) + Q_{dop}.\sin(\pi x/2T),$$

which gives a signal I specific to the first channel corrected from the frequency shift and/or by calculating a second quantity equal to:

$$Q_{dop}.\cos(\pi x/2T) - I_{dop}.\sin(\pi x/2T),$$

which gives a signal (Q) specific to the second channel corrected from the frequency shift.

5. The method according to claim 3, wherein the correlation signals of the first and/or second channels, i.e., $CORR_{dop}(I)$ and $CORR_{dop}(Q)$ are corrected by calculating a first quantity equal to:

$$CORR_{dop}(I).\cos(\pi x/2T) + CORR_{dop}(Q).\sin(\pi x/2T),$$

which gives a correlation signal CORR(I) specific to the first channel corrected from the frequency shift and/or by calculating a second quantity equal to:

$$CORR_{dop}(Q).\cos(\pi x/2T) - CORR_{dop}(I).\sin(\pi x/2T),$$

which gives a correlation signal CORR(Q) specific to the second channel corrected from the frequency shift.